
Bewersdorff, Jörg: *Luck, Logic, and White Lies. The Mathematics of Games*. CRC Press / Taylor & Francis, Boca Raton, FL, 2021, xx + 548 pp., US-\$ 55.77, £42.99, ISBN 978-0367548414 (softcover).

Writing books on the mathematics of games and gambling has a long tradition. One of the earliest tracts on probability theory – Pierre de Montmort’s *Essai d’analyse sur les jeux de hazards* (1708/14) – develops probabilistic notions using problems arising in gambling. Bewersdorff’s book *Luck, Logic and White Lies* is the second edition of a highly successful text (the German original has seen 7 editions since 2002) which uses the same strategy: Explain the tools of the trade, i.e. probability theory, combinatorics, a bit of algebra and a good deal of logic, using real-world examples. As the title indicates, there are three basic types of games: purely random games (“luck” like in roulette), combinatorial games (“logic” like in chess) and strategic games (“white lies” like in rock-paper-scissors). The randomness arises, accordingly, from different sources: from pure chance, from complexity and from partial information, respectively. Interpreting these three basic types as extremes, like the vertices of a triangle, all other games of chance arise as mixtures of two or even three of these extremes.

The author discusses more than 30 different games in 46 sections and three parts (the parts refer to the three basic types of games), a fourth part with 5 further sections is about philosophical, technical and legal issues. Typically, a section introduces a game by asking a concrete question, then the rules of the game are explained, and the mathematical tools developed. In this way a reader working through Part I (games of chance) will have covered a good deal of elementary probability theory. Since the problems come bite-sized and are often independent of each other, the text is suitable for selective reading as well as for classroom problems or group & self-study projects. At the end of many sections, further developments are sketched, with hints to the literature.

Overall, this is a well-written and entertaining text, which should be useful when teaching probability courses at school or college. Some chapters are surprising (e.g. the discussion how to turn a biased coin into a fair one by repeated trials), and the discussion of Markov chains in connection with various games and the treatment of blackjack is excellent.

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